

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. 2002-NE-31-AD; Amendment 39-12950; AD 2002-23-06]**

**RIN 2120-AA64**

### **Airworthiness Directives; Textron Lycoming AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 Series Reciprocating Engines**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule, request for comments.

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**SUMMARY:** This amendment supersedes an emergency airworthiness directive (AD) that was sent previously to all known U.S. owners and operators of Textron Lycoming (T/L) AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 series reciprocating engines. That action requires replacing certain zinc-plated crankshaft gear retaining bolts. This action still requires replacing certain zinc-plated crankshaft gear retaining bolts, but expands the population of affected engines. This amendment is prompted by two recent failures of zinc-plated crankshaft gear retaining bolts, and a reassessment of the extent to which the suspect bolts may still be present in the field. The actions specified by this AD are intended to prevent loss of all engine power and possible forced landing.

**DATES:** Effective November 19, 2002. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of November 19, 2002.

Comments for inclusion in the Rules Docket must be received on or before January 13, 2003.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2002-NE-31-AD, 12 New England Executive Park, Burlington, MA 01803-5299. Comments may be inspected at this location, by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. Comments may also be sent via the Internet using the following address: "[9-ane-adcomment@faa.gov](mailto:9-ane-adcomment@faa.gov)". Comments sent via the Internet must contain the docket number in the subject line.

The applicable service information may be obtained from Lycoming, a Textron Company, 652 Oliver Street, Williamsport, PA 10071; telephone (570) 323-6181. This information may also be obtained electronically on "<http://www.lycoming.textron.com>". This information may be examined,

by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Norm Perenson, Aerospace Engineer, New York Aircraft Certification Office, FAA, Engine and Propeller Directorate, 10 Fifth Street, 3rd floor, Valley Stream, NY 11581-1200; telephone (516) 256-7537; fax (516) 568-2716.

**SUPPLEMENTARY INFORMATION:** On October 1, 2002, the Federal Aviation Administration (FAA) issued emergency airworthiness directive (AD) 2002-20-51 that applies to Textron Lycoming AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 series reciprocating engines. AD 2002-20-51 requires replacing zinc-plated crankshaft gear retaining bolts, part number (P/N) STD-2209, with new cadmium-plated bolts P/N STD-2209. That action was prompted by two recent failures of zinc-plated crankshaft gear retaining bolts with one failure resulting in two fatalities. Since 1999, when the FAA issued AD 99-03-05 that requires the removal of zinc-plated bolts from O-540-F series engines installed on Robinson R44 helicopters, five failures have occurred on fixed-wing airplanes. That condition, if not corrected, could result in loss of all engine power and possible forced landing.

Since that AD was issued, the manufacturer has introduced gear bolt replacement kit, 05K19987, for use in replacing suspect bolts, and has determined that some of the bolts that were recalled on November 10, 1998, were not returned to T/L and may have been installed into engines after November 10, 1998. Based on that determination, the manufacturer has issued Lycoming Service Bulletin (SB) No. 554, Supplement 3, to increase the time period during which these bolts might have been installed in affected engines and to have maintenance facilities return to T/L, all crankshaft gear retaining bolts, part number STD-2209, except those that are included as part of a gear bolt replacement kit, 05K19987.

### **Manufacturer's Service Information**

The FAA has reviewed and approved the technical contents of Lycoming SB No. 554, dated September 30, 2002, that describes procedures for replacing the existing crankshaft gear retaining bolt.

### **FAA's Determination of an Unsafe Condition and Required Actions**

Since the unsafe condition described is likely to exist or develop on other Textron Lycoming AEIO-540, IO-540, O-540, LTIO-540, and TIO-540 series reciprocating engines of the same type design, the FAA issued emergency AD 2002-20-51 to prevent loss of all engine power and possible forced landing. This AD supersedes AD 2002-20-51, and requires replacing the crankshaft gear retaining bolt:

- Before further flight on engines that have been overhauled or have had the gear retaining bolt replaced between November 27, 1996 and November 10, 1998, and that have not complied with emergency AD 2002-20-51 by using a bolt from the gear bolt replacement kit, 05K19987, and
- Within 10 hours time-in-service (TIS) or 7 days after the effective date of this AD, on engines that have complied with AD 2002-20-51, but did not install a bolt from gear bolt replacement kit, 05K19987, and
- Within 10 hours time-in-service (TIS) or 7 days after the effective date of this AD, on engines that have been overhauled in the field, that have had the gear retaining bolt replaced in the field between November 10, 1998, and the effective date of this AD, or have been repaired by Lycoming between November 27, 1996 and November 10, 1998.

## **Immediate Adoption of This AD**

Since it was found that immediate corrective action was required, notice and opportunity for prior public comment thereon were impracticable and contrary to the public interest, and good cause existed to make the AD effective immediately on October 1, 2002, to all known U.S. owners and operators of Textron Lycoming AEIO-540, IO-540, O-540, LTIO-540, and TIO-540 series reciprocating engines. These conditions still exist. Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

## **Comments Invited**

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified under the caption ADDRESSES. All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 2002-NE-31-AD." The postcard will be date stamped and returned to the commenter.

## **Regulatory Analysis**

This final rule does not have federalism implications, as defined in Executive Order 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and is not a "significant regulatory action" under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### **§ 39.13 [Amended]**

2. Section 39.13 is amended by adding the following new airworthiness directive:

# AIRWORTHINESS DIRECTIVE

Aircraft Certification Service  
Washington, DC



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at "[www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl)"*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2002-23-06 Textron Lycoming:** Amendment 39-12950. Docket 2002-NE-31-AD. Supersedes emergency AD 2002-20-51.

**Applicability:** This airworthiness directive (AD) is applicable to all Textron Lycoming AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 series reciprocating engines with crankshaft gear retaining bolts, part number (P/N) STD-2209 installed, except O-540-F series engines to which AD 99-03-05 applies and on which the bolt has not been subsequently replaced with a bolt other than one included in gear bolt replacement kit 05K19987, and engines with single-drive dual magnetos. These engines are installed on, but not limited to the following aircraft:

Aero Commander. (500), (500-B), (500-E), (500-U)
Aero Mercantil. Gavilan.
Aerofab. Renegade 250.
Bellanca Aircraft. Aries T-250
Britten-Norman. (BN-2).
Cessna Aircraft. Skylane C-182, Stationair C-206, Turbo Skylane T182T, Turbo Stationair T-206
Christen. Pitts (S-2S), (S-2B).
Commander Aircraft. 114TC, 114B
DeHavilland. (DH-114-2X)
Dornier. (DO-28-B1)
Evangel-Air.
Extra-Flugzeugbau. Extra 300.
Found Bros. (FBA-2C), Centennial (100)
Gippsland. GA-200.
Helio. Military (H-250).
King Engineering. Angel.
Maule. MT-7-260, M-7-260, MX-7-235, MT-7-235, M7-235, Star
Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235).
Mooney Aircraft. "TLS" M20M.
Moravan. Zlin-50L
Pilatus Britten-Norman. Islander (BN-2A-26), Islander (BN-2A-27), Islander II (BN-2B-26), Islander (BN-2A-21), Trislander (BN-2A-Mark III-2), Islander (BN-2B).

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Piper Aircraft. 700P Aerostar, Aerostar 600A, Aerostar 601B, Aerostar 601P, Apache (PA-23 “235”), Aztec (PA-23 “250”), Aztec (PA-23 “250”), Comanche (PA-24 “250”), Comanche (PA-24 “260”), Aztec F, Aztec C (PA-23 “250”), Cherokee (PA-24 “250”), Cherokee (PA-28 “235”), Cherokee Six (PA-32 “260”), Cherokee Six (PA-32-300). “LANCE”, Comanche (PA-24 “150”), Comanche (PA-24 “250”), Comanche (PA-24), Comanche (PA-24 “260”), Comanche 260, Mirage (PA-46-350P), Navajo (PA-31), Navajo (PA-31-300), Navy Aztec (PA-23 “250”), Pawnee (PA-24 “235”), Pawnee (PA-25 “260”), Saratoga (PA-32-300), Brave 300, Sequoia 602P, T-1020, T35, Turbo Aztec (PA-23-250), Turbo Saratoga TC (PA-32-301T)

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S.O.C.A.T.A. Rallye 235CA., Rallye 235GT, Rallye 235C, TB-20

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**Note 1:** This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (h) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

**Compliance:** Compliance with this AD is required as indicated, unless already done.  
To prevent loss of all engine power and possible forced landing, do the following:

### **Engines That Have Complied With Emergency AD 2002-20-51**

(a) For AEIO-540, LTIO-540, IO-540, O-540, and TIO-540 series engines that have complied with emergency AD 2002-20-51 by installing a bolt included in bolt replacement kit 05K19987, no further action is required.

(b) For AEIO-540, LTIO-540, IO-540, O-540, and TIO-540 series engines that have complied with emergency AD 2002-20-51 but did not install a bolt included in bolt replacement kit 05K19987, within 10 hours time-in-service or 10 days after the effective date of this AD, whichever is earlier, replace the crankshaft gear retaining bolt with a new bolt included in gear bolt replacement kit, 05K19987, supplied by Textron Lycoming. Information on replacing the retaining bolt may be found in Lycoming SB No. 554, dated September 30, 2002.

### **Engines Listed by Serial Number (SN)**

(c) For AEIO-540, LTIO-540, IO-540, O-540, and TIO-540 engines with a single-drive dual magneto, and all O-540-F engines to which AD 99-03-05 applies and on which the bolt has not been subsequently replaced with a bolt other than one included in gear bolt replacement kit 05K19987, including any O-540-F engines that are listed by SN in Table 1 of Lycoming SB No. 554, dated September 30, 2002, no further action is required.

(d) Before further flight, for all other engines, replace the crankshaft gear retaining bolt with a new bolt included in gear bolt replacement kit, 05K19987, supplied by Textron Lycoming if your engine SN is listed in Table 1 of Lycoming SB No. 554, dated September 30, 2002. Information on replacing the retaining bolt may be found in Lycoming SB No. 554, dated September 30, 2002.

## **Bolts That Have Been Replaced During Field Maintenance or Field Overhaul**

(e) Replace the crankshaft gear retaining bolt with a new bolt supplied as part of gear bolt replacement kit 05K19987, supplied by Textron Lycoming, within 10 hours time-in-service or 7 days after the effective date of this AD, whichever is earlier, if:

(1) The bolt on your O-540-F series was replaced after compliance with AD 99-03-05 with a bolt that was not included in bolt replacement kit 05K19987. Information on replacing the retaining bolt may be found in Lycoming SB No. 554, dated September 30, 2002.

(2) The bolt on your AEIO, LTIO, IO, O, or TIO-540 series engine was replaced during field maintenance or field overhaul between November 27, 1996 and the effective date of this AD, or if your engine was repaired between November 27, 1996 and November 10, 1998, at Lycoming. Information on replacing the retaining bolt may be found in Lycoming SB No. 554, dated September 30, 2002.

## **Recording Gear Bolt Replacement Kit Number**

(f) After the effective date of this AD, record the number of the gear bolt replacement kit, 05K19987, in the engine records when recording compliance with this AD.

## **Prohibition Against Installing Gear Retaining Bolts P/N STD-2209**

(g) After the effective date of this AD, do not install any crankshaft gear retaining bolt, P/N STD-2209, except one that is included in a Lycoming gear bolt replacement kit, 05K19987, onto any engine listed in this AD.

## **Alternative Methods of Compliance**

(h) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, New York Aircraft Certification Office (NYACO). Operators must submit their requests through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, NYACO.

**Note 2:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the NYACO.

## **Special Flight Permits**

(i) Special flight permits may be issued in accordance with §§ 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be done.

## **Documents That Have Been Incorporated by Reference**

(j) Engine serial numbers are listed in Table 1 of Lycoming Service Bulletin No. 554, dated September 30, 2002. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Lycoming, a Textron Company, 652 Oliver Street, Williamsport, PA 17701; telephone (570) 323-6181. This information may also be obtained electronically on "<http://www.lycoming.textron.com>". Copies may be inspected at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC.

**Effective Date**

(k) This amendment becomes effective November 19, 2002.

Issued in Burlington, Massachusetts, on November 8, 2002.

Francis A Favara,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. 02-29003 Filed 11-13-02; 8:45 am]

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